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In the Claims

Please amend the claims to read as follows:

1. (Currently Amended) An apparatus comprising: A  
a scheduler for a network processor, the scheduler including  
a scheduling queue in which a weighted fair queuing is applied,  
the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling  
queue at a distance D from a current pointer for the  
scheduling queue,

wherein the distance D being is calculated for each  
flow according to the formula  $D = ((WF \times FS) / SF)$ ,

where: wherein WF is a weighting factor applicable to a  
respective flow, FS is a frame size attributable to the  
respective flow, and SF is a scaling factor; and

wherein the scheduler is operative to:

compare the distance D to the range R; and

adjust the scaling factor SF depending on a result of  
the comparing step

~~the scaling factor SF is adjusted depending on a result of~~  
~~comparing the distance D to the range R.~~

2. (Original) The scheduler of claim 1, wherein SF is  
increased if  $D > R$ .

3. (Original) The scheduler of claim 2, wherein SF is  
increased if D exceeds R in regard to a predetermined number of  
calculations of D.

4. (Original) The scheduler of claim 1, wherein SF is  
decreased if  $D < R/2$ .

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5. (Original) The scheduler of claim 4, wherein SF is decreased if D is less than one-half R in regard to a predetermined number of calculations of D.

6. (Original) The scheduler of claim 1, wherein  $SF = 2n$ , n being a positive integer.

7. (Original) A scheduler of claim 6, wherein n is incremented to adjust SF.

8. (Original) The scheduler of claim 6, wherein n is decremented to adjust SF.

9. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R; and

adjusting the scaling factor SF based on a result of the comparing step; and

managing the scheduling queue based on the adjusted scaling factor SF.

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10. (Original) The method of claim 9, wherein the scaling factor SF is increased if the comparing step determines that  $D > R$ .

11. (Original) The method of claim 9, wherein the scaling factor SF is decreased if the comparing step determines that  $D < R/2$ .

12. (Original) The method of claim 9, wherein  $SF = 2n$ , n being a positive integer, and the adjusting step includes incrementing or decrementing n.

13. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;  
FS is a frame size attributable to the respective flow; and  
SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a counter if the comparing step determines that  $D > R$ ; and

increasing SF if the incremented counter exceeds a threshold; and

managing the scheduling queue based on the scaling factor SF.

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14. (Original) The method of claim 13, wherein  $SF = 2n$ ,  $n$  being a positive integer, and the increasing step includes incrementing  $n$ .

15. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range  $R$ , flows being attached to the scheduling queue at a distance  $D$  from a current pointer for the scheduling queue, the distance  $D$  being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

$WF$  is a weighting factor applicable to a respective flow;  
 $FS$  is a frame size attributable to the respective flow; and  
 $SF$  is a scaling factor;

the method comprising:

calculating the distance  $D$  with respect to a particular flow to be enqueued;

comparing the distance  $D$  to the range  $R$ ;

incrementing a counter if the comparing step determines that  $D < R/2$ ; and

decreasing  $SF$  if the incremented counter exceeds a threshold; and

managing the scheduling queue based on the scaling factor  $SF$ .

16. (Original) The method of claim 15, further comprising:  
clearing the counter if the comparing step determines that  $D > R/2$ .

17. (Original) The method of claim 15, wherein  $SF = 2n$ ,  $n$  being a positive integer, and the decreasing step includes decrementing  $n$ .

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18. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS) / SF)$ , where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

incrementing a first counter if the comparing step determines that  $D > R$ ;

increasing SF if the incremented first counter exceeds a first threshold;

incrementing a second counter if the comparing step determines that  $D < R/2$ ; and

decreasing SF if the incremented second counter exceeds a second threshold; and

managing the scheduling queue based on the scaling factor SF.

19. (Original) The method of claim 18, further comprising:  
clearing the second counter if the comparing step determines that  $D > R/2$ .

20. (Original) The method of claim 18, wherein  $SF = 2^n$ , n being a positive integer, the increasing step includes incrementing n, and the decreasing step includes decrementing n.

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21. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R; and

increasing SF if the distance D exceeds the range R; and  
managing the scheduling queue based on the scaling factor

SF.

22. (Currently Amended) A method of managing a scheduling queue in a scheduler for a network processor, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the method comprising:

calculating the distance D with respect to a particular flow to be enqueued;

comparing the distance D to the range R;

increasing SF if the distance D exceeds the range R;

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incrementing a counter if the comparing step determines that  $D < R/2$ ; and

decreasing SF if the incremented counter exceeds a threshold; and

managing the scheduling queue based on the scaling factor SF.

23. (Currently Amended) An apparatus comprising: A  
a scheduler for a network processor, the scheduler  
including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, wherein the distance D being is calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ ,

~~where~~ wherein WF is a weighting factor applicable to a respective flow<sub>i</sub>, FS is a frame size attributable to the respective flow<sub>i</sub>, and SF is a scaling factor; and

wherein the scheduler is adapted operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that  $D > R$ ; and

increase SF if the incremented counter exceeds a threshold.

24. (Currently Amended) An apparatus comprising: A  
a scheduler for a network processor, the scheduler  
including:

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a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula  $D = ((WF \times FS) / SF)$ ,

~~where~~ wherein WF is a weighting factor applicable to a respective flow<sub>i</sub>, FS is a frame size attributable to the respective flow<sub>i</sub>, and SF is a scaling factor;

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D to the range R determines that  $D < R/2$ ; and

decrease SF if the incremented counter exceeds a threshold.

25. (Currently Amended) An apparatus comprising: A  
a scheduler for a network processor, the scheduler  
including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue,

wherein the distance D ~~being~~ is calculated for each flow according to the formula  $D = ((WF \times FS) / SF)$ ,

~~where~~ wherein WF is a weighting factor applicable to a respective flow<sub>i</sub>, FS is a frame size attributable to the respective flow<sub>i</sub>, and SF is a scaling factor;

wherein the scheduler is ~~adapted~~ operative to:



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calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increment a first counter if the comparison of the distance D to the range R determines that  $D > R$ ;

increase SF if the incremented first counter exceeds a first threshold;

increment a second counter if the comparison of the distance D to the range R determines that  $D < R/2$ ; and

decrease SF if the incremented second counter exceeds a second threshold.

26. (Currently Amended) An apparatus comprising: A  
a scheduler for a network processor, the scheduler  
including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, wherein the distance D ~~being~~ is calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ ,

~~where~~ wherein WF is a weighting factor applicable to a respective flow<sub>i</sub>, FS is a frame size attributable to the respective flow<sub>i</sub>, and SF is a scaling factor; and

wherein the scheduler is ~~adapted~~ operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

increase SF if the distance D exceeds the range R.

27. (Currently Amended) An apparatus comprising: A

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a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having:

a range R, and

a plurality of flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, wherein the distance D being is calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ ,

wherein WF is a weighting factor applicable to a respective flow, FS is a frame size attributable to the respective flow, and SF is a scaling factor;

wherein the scheduler is adapted operative to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increase SF if the distance D exceeds the range R;

increment a counter if the comparison of the distance D to the range R determines that  $D < R/2$ ; and

decrease SF if the incremented counter exceeds a threshold.

28. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;

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FS is a frame size attributable to the respective flow;  
and

SF is a scaling factor;  
the computer program product comprising:

a medium readable by a computer, the computer readable  
medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular  
flow to be enqueued;

compare the distance D to the range R;

increment a counter if the comparison of the distance D  
to the range R determines that  $D > R$ ; and

increase SF if the incremented counter exceeds a  
threshold.

29. (Currently Amended) A computer program product for use  
with a scheduler for a network processor, the scheduler  
including:

a scheduling queue in which a weighted fair queuing is  
applied, the scheduling queue having a range R, flows being  
attached to the scheduling queue at a distance D from a current  
pointer for the scheduling queue, the distance D being calculated  
for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective  
flow;

FS is a frame size attributable to the respective flow;  
and

SF is a scaling factor;  
the computer program product comprising:

a medium readable by a computer, the computer readable  
medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular  
flow to be enqueued;

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compare the distance  $D$  to the range  $R$ ;  
increment a counter if the comparison of the distance  $D$  to the range  $R$  determines that  $D < R/2$ ; and  
decrease  $SF$  if the incremented counter exceeds a threshold.

30. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range  $R$ , flows being attached to the scheduling queue at a distance  $D$  from a current pointer for the scheduling queue, the distance  $D$  being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

$WF$  is a weighting factor applicable to a respective flow;

$FS$  is a frame size attributable to the respective flow;  
and

$SF$  is a scaling factor;  
the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code adapted executed steps to:

calculate the distance  $D$  with respect to a particular flow to be enqueued;

compare the distance  $D$  to the range  $R$ ;  
increment a first counter if the comparison of the distance  $D$  to the range  $R$  determines that  $D > R$ ;  
increase  $SF$  if the incremented first counter exceeds a first threshold;

increment a second counter if the comparison of the distance  $D$  to the range  $R$  determines that  $D < R/2$ ; and

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decrease SF if the incremented second counter exceeds a second threshold.

31. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;

the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

increase SF if the distance D exceeds the range R.

32. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

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WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;  
the computer program product comprising:

a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R;

increase SF if the distance D exceeds the range R;

increment a counter if the comparison of the distance D to the range R determines that  $D < R/2$ ; and

decrease SF if the incremented counter exceeds a threshold.

33. (Currently Amended) A computer program product for use with a scheduler for a network processor, the scheduler including:

a scheduling queue in which a weighted fair queuing is applied, the scheduling queue having a range R, flows being attached to the scheduling queue at a distance D from a current pointer for the scheduling queue, the distance D being calculated for each flow according to the formula  $D = ((WF \times FS)/SF)$ , where:

WF is a weighting factor applicable to a respective flow;

FS is a frame size attributable to the respective flow; and

SF is a scaling factor;  
the computer program product comprising:

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a medium readable by a computer, the computer readable medium having computer program code ~~adapted~~ executed steps to:

calculate the distance D with respect to a particular flow to be enqueued;

compare the distance D to the range R; and

adjust the scaling factor SF based on a result of the comparison of the distance D to the range R.